USSR

ZALIKIN, A. A., KOLESCVA, V. A., STREPIKHEYEV, YU. A.

"N-Phosphorylated Esters of N-Substituted Carbamic Acids"

Abstract: By interaction of the acid chlorides of phosphoric, phosphonic and phosphonous acids with sodium urethanes in a solvent (ether or benzene), a series of N-phosphorylated esters of N-substituted carbamic acids -- N-phosphorylated urethanes and derivatives of phosphoric, phosphonic and phosphonous acids -- were obtained with quite different substitutions on the nitrogen and phosphorus atoms

$$R'R''P(O)Cl + NaN(R''')COOR \longrightarrow R'R''P(O)N(R''')COOR + NaCl.$$
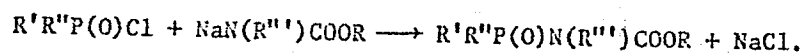
The products of the reaction are tabulated with some of their physical characteristics, yields and formulas. The structure of the compounds was checked by infrared and paramagnetic resonance spectra. The physiological activity of the compounds demonstrated that many of them have broad-spectrum pesticidal properties. Herbicidal, fungicidal and raticidal activity was detected for some of the compounds.

1/1

- 37 -

USSR

UDC 577.1.615.7/9

ZALIKIN, G. A. and POPOV, B. A.

"Effect of DTPA in Accelerating the Excretion of Americium-241 After Protracted (to 300 days) Administration of the Isotope to Mammals"

Vliyaniye DTPA na uskoreniye vyvedeniya ameritsiya-241 pri dlitel'nom do 300 dney vvedenii izotopa v organizm mlekopitayushchikh (cf. English above. Editorial board of the journal Radiobiologiya [Radiobiology]), Moscow, 1972, 13 p, bibl. 6 refs (No 4044-72 Dep (from RZh-Biologicheskaya Khimiya, No 18, 25 Sep 70, Abstract No 18 F1965 Dep)

Translation: Rats were injected subcutaneously with Am^{241} hydrochloride [sic] daily. After 200 days the animals were divided into 3 groups: (i) the animals continued to receive Am^{241} until day 300; (ii) the animals were treated with DTPA for the next 100 days; (iii) the animals received no treatment after day 200. Pentacin significantly increased the rate of excretion of Am^{241}: after 60 days of treatment the amount of isotope in the liver decreased to 13.4% compared with the amount at the start of treatment and by day 300 it came to 4.9%. After 100 days the amount of isotope in the skeleton decreased to 31% of the initial level. DTPA was found to accelerate the excretion of Am^{241} not only with urine but also with feces, altering the effective half-life of the 1/2

USSR

ZALIKIN, G. A. and POPOV, B. A., Vliyaniye DTPA na uskoreniye vyvedeniya ameritsiya-241 pri dlitel'nom do 300 dney vvedenii izotopa v organizm mlekopit-ayushchikh

isotope: about 70% of the excreted Am^{241} was excreted with a rapidly excreting $T_{1/2}$ phase of 4 days [in animals that did not receive DTPA, Am^{241} was excreted with $T_{1/2}$ of 124 days (with urine) and $T_{1/2}$ of 46 days (with feces)].

2/2

TITLE--DISTRIBUTION AND KINETICS OF EXCRETION OF AMERICIUM-241 FROM RATS
-U-

AUTHOR-(02)-STEPANOV, V.S., ZALIKIN, G.A.

COUNTRY OF INFO--USSR

SOURCE--RADIOBIOLOGIYA 1970, 10(1), 150

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--AMERICIUM ISOTOPE, LIVER, BONE, EXCRETION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0456   STEP NO--UR/0205/70/010/001/0150/0150

CIRC ACCESSION NO--AP0121130

UNCLASSIFIED

CIRC ACCESSION NO--AP0121130
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ROUTE OF INTRODUCTION OF
  PRIME241 AM INTO RATS DID NOT AFFECT ITS DISTRIBUTION IN THE LIVER
  (40-50PERCENT) AND SKELETON (15-20PERCENT). FROM THE LIVER PRIME241 AM
  WAS EXCRETED IN 2 PERIODS; 90PERCENT WITHIN 8 DAYS, AND 10PERCENT WITHIN
  THE FOLLOWING 40 DAYS. PRIME241 AM WAS FIXED BY BONE TISSUES, AND WAS
  NOT REMOVED FROM THE SKELETON, PRIME241 AM WAS ABSORBED VERY QUICKLY BY
  THE SUBCUTANEOUS LIPID TISSUES, GIVING MAX. CONCNS. IN THE MAIN ORGANS
  OF DEPOSIT IN 1-2 DAYS.   FACILITY: INST. BIOFIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2   024   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--METHOD FOR OBTAINING FLUOROALKYLARSINES -U-

AUTHOR-(04)-RAVER, KH.R., ZALIKINA, L.M., SOROKIN, A.D., VOLKOVA, YE.V.

COUNTRY OF INFO--USSR

SOURCE--AUTHOR CERTIFICATE NR 262902
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, NO 7,
DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--FLUORINATED ORGANIC COMPOUND, ORGANIC ARSENIC COMPOUND, ALKYL
    RADICAL, GAMMA RADIATION, CHEMICAL SYNTHESIS, CHEMICAL PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1772   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137012
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AA0137012
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS ANNOUNCED FOR
  OBTAINING FLUOROALKYLARSINES BY TREATING FLUOROOLEFINS WITH ARSINE. THE
  PROCESS UTILIZES GAMMA RADIATION FOR SIMPLIFICATION.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70

TITLE--SYNTHESIS OF LACTONES. VII. SELECTIVE REDUCTION OF
  ACETYLBUTYROLACTONES BY ALUMINUM ISOPROPYLATE -U-

AUTHOR-(05)-ARUTYUNYAN, V.S., SARKISYAN, O.A., KAZARYAN, SH.A., ZALINYAN,
  M.G., DANGYAN, M.T.

CCUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 856-60

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC SYNTHESIS, LACTONE, CHEMICAL REDUCTION, ORGANOALUMINUM
  COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2083

STEP NO--UR/0366/70/006/004/0856/0860

CIRC ACCESSION NO--AP0125670

UNCLASSIFIED

CIRC ACCESSION NO--AP0125670
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SELECTIVE REDN. OF ALPHA, (R
SUBSTITUTED),GAMMA,ACETYLBUTYROLACTONES (R EQUALS ET, PR, ISO-PR, BU,
ISO-BU, ISOAMYL) WITH (ISO-PRO) SUB3 AL (I) GAVE ALPHA,(R
SUBSTITUTED),GAMMA, (ALPHA,HYDROXYETHYL)BUTYROLACTONES.   THE REDN. OF
BETA,ACETYL,BETA,CARBETHOXYBURYROLACTONE WITH I GAVE
BETA,(ALPHA,PROPOXYETHYL),BETA,CARBETHOXYBUTYROLACTONE WHICH WAS
DECARBOXYLATED TO BETA,(ALPHA,PROPOXYETHYL)BUTYROLACTONE (II). THE
REDN. OF BETA,ACETYLBUTYROLACTONE WITH I ALSO GAVE II. THE REDN. OF
ALPHA,(3,OXOBUTYL)BURYROLACTONE GAVE
ALPHA,(3,HYDROXYBUTYL)BUTYROLACTONE.   ALPHA,ACETYLBUTYRO,LACTONES COULD
NOT BE REDUCED IN THIS WAY.   FACILITY: EREVAN. GOS. UNIV.,
EREVAN, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--SYNTHESIS OF LACTONES. VIII. REACTIONS OF ALPHA,SUBSTITUTED,DELTA,HYDROXY,GAMMA,CAPROLACTONES -U-

AUTHOR-(05)-ZALINYAN, M.G., ARUTYUNYAN, V.S., SARKISYAN, O.A., KAZARYAN, SH.A., DANGYAN, M.T.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6 (4), 860-2

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC SYNTHESIS, LACTONE, DEHYDRATION, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2084

STEP NO--UR/0366/70/006/004/0860/0862

CIRC ACCESSION NO--AP0125671

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0125671   PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEHYDRATION OF
ALPHA,(R,SUBSTITUTED),DELTA, HYDROXY,GAMMA,CAPROLACTONES (I) R EQUALS
ET, PR, BU, ISO-BU, ISO-AMYL) WITH HPO SUB2 GAVE
ALPHA,(R,SUBSTITUTED),GAMMA,VINYLBUTYROLACTONES. THE REPLACEMENT OF
THE OH GROUP OF I BY CL GAVE DELTA,CHLORO ANALOGS OF I WHICH REACTED
WITH ETONA TO GIVE DELTA,ETHOXY ANALOGS OF I.   FACILITY: EREVAN.
GOS. UNIV., EREVAN, USSR.

UNCLASSIFIED

1/2   014   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--LIFETIMES OF EXCITED NUCLEAR STATES ARISING DURING THE ALPHA DECAY
  OF RADIUM-223 AND BISMUTH-211 -U-
AUTHOR-(04)-KOMAR, A.P., VOROBYEV, A.A., ZALITE, YA., KOROLEV, G.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 19191), 61-3

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--NUCLEAR ENERGY LEVEL, EXCITED NUCLEUS, HALF LIFE, ALPHA DECAY,
  RADON, BISMUTH, NUCLEAR SPIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0948   STEP NO--UR/0020/70/191/001/0061/0063

CIRC ACCESSION NO--AT0112110
                        UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0112110

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY USING A MICROWAVE METHOD, THE
HALF LIFE OF THE EXCITED STATE OF THE 269 KEV LEVEL IN THE ALPHA DECAY
OF PRIME223 RA TO PRIME219 RN WAS DETD. AS 27 PLUS OR MINUS 3 PSEC, AND
THE MEAN HALF LIFE OF THE 350 KEV LEVEL IN PRIME211 BI TO PRIME207 TL AS
0.43 PLUS OR MINUS 0.1 PSEC. FOR PRIME207 TL, FIRST EXCITED AND GROUND
STATE SPIN VALUES OF 3-2 PLUS AND 1-2 PLUS WERE ASSIGNED AND IDENTIFIED
AS 2D 3-2 AND 3S 1-2, RESP.   FACILITY: FIZ.-TEKH. INST. IM.
IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

KOMAR, A. P., Academician of the Academy of Sciences Ukrainian SSR, VOROB'YEV, A. A., ZALITE, YU. K., and KOROLEV, G. A., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences USSR, Leningrad

"Lifetimes of Excited Nuclear States Occurring in Alpha-Decay of Ra-223 and Bi-211"

Abstract: Existing methods for measuring the short lifetimes of excited states in the region of heavy alpha-active nuclei have a number of important limitations. The authors used a microwave method developed in their laboratory. The device consists of two time superhigh-frequency shutters -- for alpha particles and for conversion electrons e_c, a time-delay system between the shutters, and the measuring apparatus. The source, set on thin (5-micron) aluminum foil, is placed between modulating resonators. A double-focusing magnetic-sector beta spectrometer, with a pulse resolution of 0.75 percent, is tuned to the conversion line peak. When the superhigh-frequency modulation is switched on, the energy of e_c flying through the resonator gap changes

1/2

USSR

according to the superhigh-frequency phase. As a result, the detector of the beta spectrometer records only those e_c which did not change their energy. The time shutter for the alpha particles is another resonator which simulates the energy of secondary-emission electrons formed by alpha particles during passage through the foil and accelerated in the gap between the foil and the resonator to ~ 2 kev. As they pass through the resonator, the electrons are analyzed for energy with the aid of an electrostatic analyzer and an open-type electron multiplier. Chosen for the lifetime measurement were the level 269 kev of Rn-219, formed in alpha-decay of Ra-223, and the level 350 kev of Tl-207, formed in alpha-decay of Bi-211.

2/2

USSR

ZALITIS, V. A., KHERMANIS, E. Kh., Institute of Electronics and Computer Technology, Academy of Sciences of the Latvian SSR.

"An Analysis of Sawtooth Voltage Generators with Negative Resistance"

Abstract: The subject is a sawtooth voltage generator with compensating EMF. Such generators require a nonlagging EMF, which is frequently provided by the use of a high capacity capacitor in place of the power source, although this worsens linearity and eliminates the possibility of close control on the slope of the "teeth."

The circuit considered in this case differs in that the EMF is grounded, the amplifier has a coefficient of amplification greater than 1, and a voltage divider is added so that the ratio of two resistances determines the coefficient of amplification.

The easiest way to analyze such circuits is to consider the amplifier in terms of a negative resistance. The circuit design is quite simple in this case and the mathematical analysis is straight-forward, showing that the necessary condition of linearity is that the negative resistance be equal

1/2

USSR

ZALITIS, E. A., KHERMANIS, E. K., Izvestiya Akademii Nauk Latviskoy SSR, No 2, 1970, pp 109-115

absolutely to the positive resistance in the circuit. After some discussion of the ideal case, the article considers real approximations to a negative resistance, principally a phase inversion direct current amplifier with positive resistive feedback. Two circuits of this type are shown schematically, one with two transistors of different conductivity, and one with four compound transistors. These circuits are analyzed in some detail. It is shown that variations in the gain of the amplifier are caused by the fact that it depends on the gain of the transistors, and the first transistor in the circuit is working at small current levels, where the gain is small and variable. Using type MP113 and MP116 transistors, the nonlinearity of the negative resistance is below 1%. The second circuit design improves this characteristic by a factor of 10, but it has the drawback of being temperature sensitive.

Both circuits shown are subject to good control over a fairly wide range by varying the voltage during the periods of charge and discharge of the condenser. This makes it possible to form triangular impulses, sawteeth or other trapezoidal wave forms from a simple rectangular input.

2/2

USSR

Thin Films

ZAKHAROV, V. P., ZALIVA, V. I.

"Phase Transition from Amorphous State to Polycrystal in Thin Films of C, Si, Ge, GeSe and GeTe and its Influence on Conductivity and Optical Density"

Abstract: This work studies certain regularities of the phase transition from the amorphous state to the polycrystalline state in thin films of C, Si, Ge, GeSe and GeTe and the influence of this transition on conductivity and optical properties. The phase transition occurs under the experimental conditions (films 10^{-5} cm thick, prepared by vacuum sputtering onto unheated glass substrates and transferred to capron holders, transition stimulated by the power-ful light pulse of a gas discharge tube) in such a way as to indicate the qual-itative identity of the conversion in all of the substances tested. The threshold energy required to stimulate the transition indicates that the amorphous state is relatively stable in these compounds. The transition changes the conductivity, optical reflection spectra, transmission spectra and integral optical density of the films.

1/1

USSR

ZALIVA, V. I. and ZAKHAROV, V. P.

UDC: 621.315.592

"Physical Nature of the Switching Effects in Amorphous Semicon-
ductors"

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp
1252-1255

Abstract: This paper describes comparative experiments in the in-
vestigation of kinetics of the phase transition from the amorphous
state to the polycrystal and of the switching effects and "memory"
in amorphous GeTe films. The purpose of these experiments is to
clarify the physical nature of the reversible switching effect.
Such effects were observed in films of such materials as Ge-Si-As-
Te compounds and in stoichiometric GeTe, all of them amorphous.
Also investigated was the thermally stimulated crystallization of
amorphous GeTe with an electric field of up to $4 \cdot 10^4$ V/cm in in-
tensity applied to the substance. The effect of this experiment
was negative, with the applied electric field having no influence
in the kinetics of crystallization. The authors find that the
physical nature of phase transformations is universal, and that
they are connected with the formation of "memory" in amorphous
1/2

USSR

ZALIVA, V. I., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1252-1255

GeTe and with its crystallization under the action of rapid heating by powerful light pulses. They find also that the growth of crystals measuring 10^{-4}–10^{-3} cm and taking the form of threads, causes the memory effect and occurs in a time of the order of 10^{-5} to 10^{-4} seconds, corresponding to the experimentally determined time for the formation of the memory.

2/2

1/2   028

UNCLASSIFIED

TITLE--PREPARATION OF THICK ANODE FILMS ON ALUMINUM ALLOYS IN A COMPOSITE
ELECTROLYTE -U-

PROCESSING DATE--23OCT70

AUTHOR-(03)-IGNATOV, N.N., ZALIVALOV, F.P., TOMASHOV, N.D.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 554-60

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM ALLOY, ELECTROLYTE, ANODIZATION, MICROHARDNESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1948

STEP NO--UR/0080/70/043/003/0554/0560

CIRC ACCESSION NO--AP0118910

UNCLASSIFIED

2/2   028

CIRC ACCESSION NO--AP0118910   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   PROCESSING DATE--23OCT70

STUDIES WERE MADE OF THICK FILM ANODIZING OF INDUSTRIALLY IMPORTANT AL ALLOYS IN H_2SO_4 20 PLUS $H_2C_2O_4$ 15 G-L. AT 15-18DEGREES, 2.5 AND 5 A.-DM PRIME2 C.D., AND FOR 0.5-3.5 HR. VOLTAGE VS. TIME CURVES ARE OBTAINED AND THEIR CHARACTERISTICS ARE EXPLAINED. THE RATIO ETA OF THE WT. OF ANHYD. Al_2O_3 FORMED TO THE WT OF AL REACTED DECREASES WITH TIME FOR MOST CASES DUE TO DISSOLN. OF THE OXIDE FILM. THE QUALITY OF THE ANODIZED FILM DETERIORATES WITH LOWER ETA. THE THICKNESS INCREASES LINEARLY WITH TIME AT THE RATE 0.7-1 MU-MIN. FOR ALLOYS CONTG. NEGLIGIBLE CU, THE MICROHARDNESS IS 480-520 KG-MM PRIME2. CU DECREASES THE MICROHARDNESS AND INCREASES THE POROSITY. AT THE HIGHER C.D. OF 5A-DM PRIME2, THE FILM QUALITY IMPROVES. THE COMPOSITE ELECTROLYTE GIVES FILMS COMPARABLE TO THOSE OBTAINED IN COLD H_2SO_4 AND CAN BE USED WIDELY IN PRACTICE. FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 669.017:539.4+548.55

SAVITSKIY, Ye. M., BURKHANOV, G. S., ZALIVIN, I. M., Moscow

"Structure and Mechanical Properties of NiAl in the Polycrystalline and Single Crystal States"

Kiev, Problemy Prochnosti, No 11, Nov 72, pp 111-113.

Abstract: The influence of interstitial impurities and structure on the cold shortness of the metal compound NiAl (CaCl-type crystal   structure) and the dependence of mechanical properties of NiAl single crystals on the crystallographic direction of compression testing are studied. The material has a body-centered cubic lattice with a mixed type of interatomic bond, primarily metallic. Production of the compound in the single crystal state with reduced content of interstitial impurities causes an increase in ductility and a displacement of the cold shortness threshold in compression testing from 400-500°C to room temperatures. Studies of the mechanical properties of single crystals show their stronger orientation dependence in comparison to other face-centered cubic and body-centered cubic metals. The anisotropy of compressive strength was approximately 200%, as opposed to 30% for body-centered cubic metals.

1/1

USSR

ZALIZNYAK, M. A.

UDC 518.5:681.3.06

"Algorithm and Program for Composition of Combination of n elements with Respect to m"

Uch. Zap. Perm'. Un-t, [Scientific Writing of Perm' University], 1970, No 220, pp 161-163, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V668).

No Abstract.

1/1

USSR

BOTOVA, R. F., YEZHOVA, E. A., ZALIZNYAK, M. A., RODINOVA, L. A., CHERKASHNEVA, K.

UDC 681.3.06:51

"Translator for the "ARAGATs" Computer"

Translation: The translator for the "ARAGATs" computer is based on the TA-1 translator for the M-20 computer. The input language is ALGOL-60 with some limitations.

1/1

71203r Strontium nitrate-alkali metal nitrate-water systems. Yakimov, M. A.; Vlasova, E. P. (USSR). Zh. Neorg. Khim. 1970, 15(1), 201-4 (Russ). Solubilities in $Sr(NO_3)_2-NaNO_3-H_2O$ (system 1) at 25° and in $Sr(NO_3)_2-KNO_3-H_2O$ and $Sr(NO_3)_2-CsNO_3-H_2O$ systems (systems II and III, resp.) at 25 and 35° are given. System I has three soly. isotherms, corresponding to $Sr(NO_3)_2.4H_2O$, $Sr(NO_3)_2$, and $NaNO_3$. In systems II and III, only $Sr(NO_3)_2.4H_2O$ forms at 25° and only $Sr(NO_3)_2$ forms at 35°. In these systems the soly. of ith component increased with increasing concn. of the kth component. This proves complex-formation in systems II and III and its absence in system I.
HMJR

REEL/FRAME
19710741

18

USSR   UDC 576.311:578.085.2

IZAKOVA, L. P., BOGOMOLOVA, N. N., ZALKIND, S. Ya., and ANDZHAPARIDZE, O. G.,
Laboratory of Cytopathology and Laboratory of Immunobiology, Institute of
Virus Preparations, Ministry of Public Health USSR, Moscow

"Studies of Lysosomes of Cells in Cultures Infected With Tickborne Enceph-
alitis Virus"

Abstract: Cytochemical methods, determination of acid phosphatase activity
and cytological methods (accumulation of neutral red and acridine orange
dyes) were used in a comparative study of the lysosome apparatus of two
stable cell lines, one of which acutely infected and the other latently
infected with tickborne encephalitis virus. Considerable changes in the
localization and psysiological state of the lysosomes were found which are
apparently associated with different stages of the infection. Immediately
after infection, lysosome granules move to the cell periphery and their
activity is reduced. After 2-3 hours, the lysosomes are in the peri-
nuclear zone; their acid phosphatase activity is enhanced, as is the ac-
cumulation of vital stains. For the acute infection, the maximum reaction
1/2

USSR

is observed 24 hours after virus inoculation. In the latent infection, the
maximum reaction is observed 24-72 hours after infection. After 5-6 days,
the lysosome apparatus returns to its normal state. The lysosome reaction
in the early stages of infection thus depends on the type of infection
(acute or latent).

2/2

1/2   026

UNCLASSIFIED

TITLE--ORGANIC CULTURES OF THE RESPIRATORY TRACT OF HUMAN EMBRYO -U-

PROCESSING DATE--16OCT70

AUTHOR-(03)-GORYUNOVA, A.G., ALEKSEYEVA, A.K., ZALKIND, S.YA.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 5, PP 108-111

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EMBRYOLOGY, RESPIRATORY SYSTEM, TISSUE CULTURE, CULTURE
MEDIUM, VITAMIN, PENICILLIN, STREPTOMYCIN, GLUCOSE, INFLUENZA VIRUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0198

STEP NO--UR/0219/70/069/005/0108/0111

CIRC ACCESSION NO--AP0120896

UNCLASSIFIED

CIRC ACCESSION NO--AP0120896
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY THE METHOD OF ORGAN CULTURES ON
  MILLIPOROUS HA FILTERS THE AUTHORS CULTIVATED TISSUES OF THE TRACHEA,
  NASAL EPITHELIUM AND LUNG OF 5-6 MONTH OLD HUMAN EMBRYOS. THE NUTRIENT
  MEDIUM WAS COMPOSED OF 80PERCENT NO. 199 MEDIUM, 20PERCENT OF EMBRYONIC
  EXTRACT WITH THE ADDITION TO 1 ML OF MEDIUM OF 4 MG OF GLUCOSE, 10 MG OF
  VITAMIN A AND 100 UNITS EACH OF PENICILLIN AND STREPTOMYCIN. CULTURES
  OF THE TRACHEA RETAINED VIABILITY FOR 2 MONTHS (OBSERVATION PERIOD),
  CULTURES OF THE NASAL EPITHELIUM AND PULMONARY TISSUE, FOR ONE AND ONE
  HALF MONTHS. THE CULTURES WERE INFECTED WITH A2 INFLUENZA VIRUS IN A
  DOSE OF 10 PRIME5-10 PRIME6 ID SUB50 AND ITS PROPAGATION WAS STUDIED
  SIMULTANEOUSLY WITH INOCULATION OF VIRAL PARTICLES AND 7-35 DAYS AFTER
  BEGINNING OF CULTIVATION. IT IS SHOWN THAT A2 INFLUENZA VIRUS IS
  CAPABLE OF PROPAGATION IN ALL THREE TYPES OF CULTURES DURING THE ENTIRE
  PERIOD OF CULTIVATION. IN THE EXPLANTS OF THE PULMONARY TISSUE STRAINS
  OF A2 INFLUENZA VIRUS POSSESSING AND NOT POSSESSING RESIDUAL VIRULENCE
  FOR MAN MULTIPLY.   FACILITY: MOSCOW SCIENTIFIC RESEARCH INSTITUTE
  OF VIRAL PREPARATIONS.

                              UNCLASSIFIED

1/2   037   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MICRO ARC TYPE OPERATION OF THE ELECTRODES OF A MAGNETOHYDRODYNAMIC
   GENERATOR -U-
AUTHOR-(04)-ZALKIND, V.I., KIRILLOV, V.V., LARIONOV, YU.A., SEMENOV, N.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. MEKH. TEKH. FIZ.; NO. 1, 130-4(JAN-FEB 1970)

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRODE, MAGNETOHYDRODYNAMICS, ELECTRIC ARC, ARC DISCHARGE,
   SILICON CARBIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0114   STEP NO--UR/0207/70/000/001/0130/0134

CIRC ACCESSION NO--AP0127740
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0127740   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPERATION OF THE ELECTRODES OF A MAGNETOHYDRODYNAMIC GENERATOR WAS INVESTIGATED AT RELATIVELY HIGH CURRENT DENSITIES, USING METALLIC AND SILICON CARBIDE ELECTRODES. IT WAS FOUND THAT, IN CASE OF OPERATION AT HIGH CURRENT DENSITIES, MICRO ARCS ARE FORMED AT THE ELCTRODE SURFACE. THE BOUNDARY BETWEEN THE ELECTRODE AND THE INSULATOR, WHERE POTASSIUM COMPOUNDS ARE DEPOSITED ON THE ELECTRODE SURFACE, WAS FOUND TO EXERT A STRONG INFLUENCE ON THE BEHAVIOR OF THE ARCS, WHICH ARE CONSIDERED AS BEING RESPONSIBLE FOR THE ELECTRO EROSION OF THE ELECTRODE. SUCH MICRO ARCS APPEARED ON METALLIC CATHODES AT CURRENTS OF 5 TO 6 A WITH AN ELECTRODE SURFACE OF 11 CM PRIME2 UNDER CONDITIONS CLOSE TO SHORT CIRCUIT. THE DAMAGING BURNING OF ARCS BETWEEN THE ELECTRODE AND INSULATOR MAY BE PREVENTED BY IMPROVED DESIGN.

UNCLASSIFIED

USSR

UDC 533.9

VISHNEVETSKIY, V.N., VOYTENKO, D. A., VOLKOV, YE. D., DIKIY, A. G., ZALKIND, V. M., KONOTOP, P. I., MOISEYEV, S. S., PAVLICHENKO, O. S., PASHNEV, V. K., SUPRUNENKO, V. A., TOLOK, V. T., TERESHCHENKO, F. F., TONKOPRYAD, V. M., and TARASENKO, V. P., Physico-Technical Institute of Academy of Sciences Ukrainian SSR, Kharkov

"Energy Losses of Plasma in a 'Uragan' Stellarator With Large Shear"

Abstract: Investigations of the rate of energy losses in plasma have shown that the holding time of particles significantly exceeds the energy life time when the plasma is of collision type. This article discusses the results of investigations on the rate of energy losses of collision-type plasma for the "Uragan" stellarator. The authors study the dependence of energy life time of the plasma on the amount of shear and the angle of conversion. They make extensive use of graphs to illustrate their findings and find that the experimental points lie on a straight line. The authors conclude that the results may be explained on the basis that a temperature-drift instability develops in the plasma. The article contains 5 figures and 8 bibliographic entries.

1/1

USSR   UDC 533.9

ATAMANOV, N. S., ZALKIND, V. M., ZYKOV, V. G., IL'YENKO, B. P., LATS'KO, Ye.
M., and TOLOK, V. T., Physicotechnical Institute of the Academy of Sciences
UkrSSR, Khar'kov

"Capture of Plasma Injected Into an Injector-Divertor Device of a Stellarator
in the Case of a Short- and Long-Term Modulation of the Confining Magnetic
Field"

Abstract: The experimental investigation of the capture of plasma by the mag-
netic field of an injector-divertor device of a stellarator is described. The
capture of the plasma was investigated by modulation durations of the confining
magnetic field lesser and greater than the duration of plasma injection. By
the use of a short-term pulse of the counter magnetic field, the forward part
of the plasma flux, which is more valuable for the injection, can be trapped
and, in the meanwhile, the rear part will split off by entering into the injec-
tion chamber. The length of the plasma flow captured in the trap can be con-
trolled by changing the pulse duration of the magnetic field opposed to the
field of the trap. The results are discussed by reference to an oscillogram of
the probe saturation current of the captured plasma and dependence of the total
number of captured charged particles and the density of captured plasma on the
counter magnetic field intensity. Four illustr., six biblio. refs.
1/1

TITLE--DETERMINATION OF THE OPTIMUM ALKALINITY OF SECOND SATURATION JUICE
  USING A FLAME PHOTOMETER -U-

AUTHOR--ZALMAN, V.V.

COUNTRY OF INFO--USSR

SOURCE--SAKH. PROM. 1970, 44(2), 41-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SOLUTION ALKALINITY, FLAME PHOTOMETRY, CALCIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1436   STEP NO--UR/0339/70/044/002/0041/0046

CIRC ACCESSION NO--AP0112430
                        UNCLASSIFIED

CIRC ACCESSICN NC—AP0112430   UNCLASSIFIED   PROCESSING DATE—20NOV70
ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. FLAME PHOTOMETRIC CA ASSAY IS
   SUGGESTED FOR DETN. OF THE OPTIMUM ALKY. (MIN. CA SALT CONTENT) OF THE
   2ND SATN. JUICE.

UNCLASSIFIED

1

USSR

UDC 621.762:669.018.24(088.8)
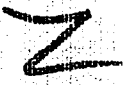
AL'TMAN, A. B., GLUSKIN, Ya. A., GRIB, V. V., ZALMANOV, Yu. S., MEMELOV, V. L.

"Metal Ceramic Antifriction Material"

Translation: A material based on Co is suggested, containing a solid lubricant. In order to increase the mechanical and antifriction properties in the dry friction mode, Ag is introduced with the following ratio of components (in %): Ag 5-20, solid lubricant 5-15, Co -- remainder.

1/1

1/2   017   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--PROFESSOR AND DOCTOR OF TECHNICAL SCIENCES -U-

AUTHOR--ZALMANZON, L.A.

COUNTRY OF INFO--USSR

SOURCE--PNEVMONIKA I MODELI (PNEUMONICS AND MODELS), MOSCOW, ZNANIYE,
1970, 64 PP
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HUMAN PHYSIOLOGY, BIOLOGIC MODEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1234   STEP NO--UR/0000/70/000/000/0001/0064

CIRC ACCESSION NO--AM0130242
                         UNCLASSIFIED

CIRC ACCESSION NO--AM0130242
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OF "CONCLUSION", PAGE 62: OUR
CONCLUSION REGARDING THE OUTLOOK FOR EMPLOYING PNEUMONIC ELEMENTS TO
SIMULATE VARIOUS PROCESSES AND REGARDING THE SIGNIFICANCE OF SIMULATION
FOR STUDYING THE CHARACTERISTICS OF PNEUMONIC ELEMENTS THEMSELVES
FOLLOWS FROM WHAT HAS BEEN SET FORTH ABOVE.   ANALYSIS OF THE USE OF
PNEUMONIC ELEMENTS IN MODELS LEADS TO THE CONCLUSION THAT CERTAIN
PROBLEMS OF A MORE GENERAL CHARACTER MUST ALSO BE RAISED, VIZ.:   1) THE
CREATION OF SETS OF THE SIMPLEST ELEMENTS AND UNITS INTENDED
INDIVIDUALLY FOR THE PERFORMANCE OF RELATIVELY UNCOMPLICATED SIMULATION
FUNCTIONS ON THE BASIS OF THE USE OF VARIOUS PHYSICAL EFFECTS; 2) THE
DEVISING OF CONSTRUCTION METHODS ON THE BASIS OF SUCH ELEMENTS AND UNITS
OF COMBINED SIMULATORS; 3) THE USE AS MODELS OF MEDICAL EQUIPMENT, HERE
CONSIDERED, WHICH IS CONNECTED TO THE SYSTEM OF A LIVING ORGANISM; 4)
THE DEVISING OF A METHODOLOGY FOR SIMULATING PROCESSES UNDER CONDITIONS
WHERE PARAMETERS OF THE MODEL ARE NOT FULLY KNOWN BEFOREHAND AND HAVE
TO BE REFINED, AS THE METHODOLOGY IS POLISHED UP, ON THE BASIS OF A
COMPARISON OF ONLY CERTAIN CHARACTERISTICS OF THE MODEL AND THE INITIAL
OBJECT; 5) NEW PROBLEMS IN AEROHYDRODYNAMICS RESEARCH ARISING FROM
COMBINATIONS OF VARIOUS FORMS OF GAS AND FLUID FLOW IN SIMULATED
ELEMENTS; 6) THE CREATION OF SPECIALIZED MEASURING AND RECORDING SYSTEMS
FOR SIMULATORS.   THESE PROBLEMS, WHICH THE AUTHOR POINTS OUT IN THE
BOOK ONLY BY WAY OF FORMULATING THEM, REQUIRES SPECIAL STUDY.

USSR

ZALMANZON, L. A., Professor and Doctor of Technical Sciences

Pnevmonika i Modeli (Pneumonics and Models), Moscow, "Znaniye," 1970, 64 PP

Translation of "Conclusion," page 62: Our conclusion regarding the outlook for employing pneumonic elements to simulate various processes and regarding the significance of simulation for studying the characteristics of pneumonic elements themselves follows from what has been set forth above.

Analysis of the use of pneumonic elements in models leads to the conclusion that certain problems of a more general character must also be raised, viz.:

1) The creation of sets of the simplest elements and units intended individually for the performance of relatively uncomplicated simulation functions on the basis of the use of various physical effects;

1/3

USSR

ZALMANZON, L. A., Pnevmonika i Modeli, Moscow, "Znaniye," 1970, 64 pp

2) The devising of construction methods on the basis of such elements and units of combined simulators;

3) The use as models of medical equipment -- here considered -- which is connected to the system of a living organism;

4) The devising of a methodology for simulating processes under conditions where parameters of the model are not fully known beforehand and have to be refined, as the methodology is polished up, on the basis of a comparison of only certain characteristics of the model and the initial object;

5) New problems in aerohydrodynamics research arising from combinations of various forms of gas and fluid flow in simulated elements;

6) The creation of specialized measuring and recording systems for simulators.

2/3

- 97 -

•USSR

ZALMANZON, L. A., Pnevmonika i Modeli, Moscow, "Znaniye," 1970

    These problems, which the author points out in the book only
by way of formulating them, require special study.

3/3

24

USSR

ADO, YU. M., ZHURAVLEV, A. A., LOGUNOV, A. A., MYAE, E. A., NAUMOV,
A. A., PISAREVSKIY, V. YE., ROGOZINSKIY, V. G., TUSHABRAMISHVILI, K.
Z., SHUKEYLO, I. A., BOYKO, S. N., KOMAR, YE. G., MALYSHEV, I. F.,
MOZIN, I. V., MONOSZON, N. A., MOZALEVSKIY, I. A., SPEVAKOVA, F. M.,
STOLOV, A. M., TITOV, V. A., VODOP'YANOV, F. A., KUZ'MIN, A. A., KUZ'-
MIN, V. F., MINTS, A. L., RUBCHINSKIY, S. M., UVAROV, V. A., GUTNER,
B. M., ZALMANZON, V. B., PROKOP'YEV, A. I., and TEMKIN, A. S.

"Some Results of the Overall Adjustment and Start-up of the 70-Gev
Proton Synchrotron of the Institute of High-energy Physics"

Abstract: The physical part of the plan for the 70-Gev proton syn-
chrotron was executed by the Institute of Theoretical and Experimental
Physics. The electromagnet with feed system, the vacuum chamber, and
the injection devices were developed at the Scientific Research Insti-
tute of Electrophysical Apparatus imeni D. V. Yefremov. The radio-
electronic systems for acceleration process control and generation of

1/4

USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

the accelerating field, as well as the radiotechnical measurement and beam observation systems, were developed by the Radiotechnical Institute of the Academy of Sciences USSR. "Tyazhpromelektroproyekt" [State Planning Institute for the Planning of Electrical Equipment for Heavy Industry] designed the general-purpose electrotechnical devices and cable connections. The plan for the construction complex of the accelerator was developed by the State All-Union Planning Institute. The construction of the accelerator was under the general supervision of the State Committee for the Use of Atomic Energy USSR. The adjustment of individual systems and the overall adjustment and start-up of the accelerator were carried out by the Institute of High-energy Physics and the developers of the accelerator systems. The basic beam work was done by the Institute of High-energy Physics with the participation of the Radiotechnical Institute. The construction of the accelerator was begun in 1960, and all the basic construction and assembly work was completed at the beginning of

2/4

USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

1967. At the initial stage of construction, before the formation of the Institute of High-energy Physics in 1963, the work was coordinated by the Institute of Theoretical and Experimental Physics. The linear accelerator injector was started on 28 July 1967, the operation of the individual systems was adjusted by September 1967, and the physical start-up of the accelerator was accomplished on 14 October.

A description is given of the work done to adjust the annular electromagnet (including the electromagnet cooling and feed systems), the injection system (consisting of matching channel and injection device), the vacuum system, the radioelectronic system (including the accelerating field generation system, the acceleration process control system, and the radiotechnical measurement system), and the beam observation system (which provides for beam observation in the first revolution and during acceleration). In the physical start-up of the accelerator the main efforts were directed towards obtaining accelerated protons of the planned energy, and the problem of obtaining high

3/4

.USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

intensity of the accelerated proton was not raised.

The article gives a listing of the principal parameters of the proton synchrotron, as well as a schedule of the individual stages of the start-up of the accelerator. Photographs include a view of the part of the ring hall in the beam injection area and a general view of the hall of ignitron rectifiers.

4/4

"Distribution in Tissue Depth of the Absorbed Dose From α-Active Aerosol
Particles"

Abstract: Calcualtions are carried out of the absorbed dose in tissue in
relation to the distance from an aerosol particle of an   α -active
isotope. The particle is assumed to be imbedded in the tissue. The non-
uniformity of energy losses along the path of α -radiation and the actual
energy spectra of aerosol particles are considered. On the example of

$^{239}PuO_2$ particles, the effect of particle size on the absorbed dose is discussed.
It is shown that the dosage rate on the particle surface depends on the
particle size (parameter k), rapidly decreasing with increasing particle
size (by a factor of 100 on transition from k = 0.01 to k = 0.1). On the
basis of the calculations, the relation between the dosage rate and the dis-
tance from the aerosol particle surface shows a slight rise in the dosage
rate at distances somewhat smaller than the length of the path of α -particles
in tissue. This is due to a rise in the linear energy loss by a α -particles
at the end of the path. It is brought out that the distribution of the dose
1/2

. USSR

ZALMANZON, YU. YE., and CHUTKIN, O. A., Meditsinskaya Radiologiya, Vol 17,
No 7, Jul 72, pp 69-72

in tissue depth is a highly variable function; this must be taken into con-
sideration in estimating the damage that may be caused by α-active aerosols.
The importance of the results of the study from the standpoint of danger
presented by irradiation of the respiratory tract in occupational accidents
involving inhalation of α-active aerosols is pointed out.

2/2

USSR   UDC: 539.1.08

VAD'IN, V. I., ZALMANZON, Yu. Ye., NIKITIN, V. I., CHUTKIN, O. A.

"Radiometry and Identification of Alpha-Active Isotopes of 'Thick' Aerosol Samples"

Translation: The authors show the possibility of determining isotopic composition for "thick" specimens, and find corrections for the radiation yield and the effectiveness with which radiation is registered for such specimens. Five illustrations, one table, bibliography of eight titles.

1/1

USSR   UDC 616.24-001.29-057-07:616.24-088.927.994.02.239

ZALMANZON, Yu. Ye., and CHUTKIN, O. A., Union Scientific Research Institute
of Instrument Building

"Doses of Radioactive Aerosols Absorbed in the Lungs"

Moscow, Meditsinskaya Radiologiya, Vol 17, No 4, 1972, pp 63-68

Abstract: Mathematical models are developed to review and expand current con-
cepts concerning the absorption of radioactive aerosols and safety standards.
The factors considered in the calculations include: concentration of radio-
activity in the inhaled air, dispersion and size of radioactive particles,
flow dynamics, respiratory rate, tidal volume, distribution of the radioactive
matter in the bronchi, bronchioles, and alveoli, and concentration of radio-
activity per unit weight of the lungs. Because of unavailability of precise
data on certain parameters, simplifications are made in the equations. By
using Pu^{239} as an example, it is demonstrated that at a given (constant) con-
centration of the radioactive aerosol, the dose absorbed in the lungs may vary
by a factor of several hundred, depending on the actual value of a number of
variables. Therefore, in order to establish valid standards, it is necessary
to develop methods by which the inhaled fraction of the radioactive aerosol
can be measured.
1/1

USSR   UDC: 533.951.2/.3

BASHARINOV, A. Ye., ZALOGIN, N. N., KISLOV, V. Ya., LUKINOV, I. N.

"Investigation of Mechanisms of Excitation of Oscillations of Gyroharmonics in a Plasma-Beam Discharge"

Translation: An experimental study is made of oscillations excited in a plasma-beam discharge in a magnetic field on frequencies $\omega > \omega_0 \approx \omega_p$. It is shown that there is spatial amplification on harmonics of the cyclotron frequency and on the structure of fields in the form of the composition of slow and fast waves. Emission of the fast transverse wave takes place in the region of abrupt change of fields of the fast wave. Authors' abstract.

1/1

USSR

BURNYSHEVA, A. N., GRINENKO, B. A., ZALOZNYKH, N. N.

"Optimizing the Hardware of an Automatic Control System by the Method of Statistical Modeling"

[No abstract]

Conferences

USSR

FAYERMAN, B. S., and ZAL'TSMAN, M. YA.

"The Seventh Scientific and Technical Meeting of Laboratory Technical Personnel of Light-Alloy Processing Plants"

Moscow, Zavodskaya Laboratoriya, No 12, 1970, pp 1540-1542

Abstract: This article presents an account of a meeting held in Moscow on 8-9 June, 1970, during which a series of reports was presented on problems of increasing the productivity at metallurgical plants producing light alloys, and on the role of materials in the development of modern aviation. The work was divided into three working sections: 1) methods for determining the composition, structure, and properties of alloys; 2) physical metallurgy and heat treatment of aluminum and magnesium alloys; and 3) physical metallurgy and heat treatment of titanium alloys and steels. Eighty-five persons representing 14 enterprises participated in the work of the first section. Twenty reports were presented on control methods, studies of chemical composition, mechanical properties of semi-finished products, corrosion resistance, and the technology of non-destructive control. The second section involved 105 persons from 14 organizations,

1/2

USSR

FAYERMAN, B. S., and ZAL'TSMAN, M. YA., Zavodskaya Laboratoriya,
No 12, 1970, pp 1540-1542

during which 22 reports were presented dealing with phase
composition, structural transformations and their effect on alloy
properties, structural formation under strain, and the heating
effect of technological factors. Seventy-five persons from 12
organizations participated in the work of third section. Its
23 reports dealt with problems of the mechanism and kinetics of
phase transformations during annealing, the high rate heating
of titanium alloys, the effect of structure on mechanical pro-
perties, and the slowing down of the destruction of titanium
alloys. It was noted that certain decisions of the Sixth meeting
were not fulfilled and some criticism was expressed regarding
insufficient results in certain fields. The decisions and re-
commendations of the conference are outlined.

2/2

USSR

ZAL' SMAN, G. L., CHULIMOV, G. A., and YUROVA, K. S., Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, USSR Academy of Sciences

UDC 591.1

"Dynamics and Principles of Saturation of the Organism With Inert Gases"

Moscow, Izvestiya Akademii Nauk SSSR, No 2, Mar/Apr 71, pp 192-203

Abstract: Maximum tolerable and minimum injurious (appearance of decompression sickness) oversaturation of the body with nitrogen, helium, and argon were determined and the laws governing the process of saturation of body fluids with these three inert gases were analyzed. Laboratory dogs were placed in a hyperbaric chamber and exposed to the gases at various pressures and for various periods. The results are presented in tables. The parameters determining the shape of the saturation curves and the period of half-saturation were calculated. On the basis of a comparison with analogous data previously obtained on humans, probable saturation curves applicable to the human body were constructed. The concept of a two-phase saturation process determined by different extracellular and intracellular transport mechanisms was established. A tricomponent mathematical model describing the concentration of an

1/2

- 84 -

USSR

ZAL'TSMAN, G. L., et al., Izvestiya Akademii Nauk SSR, No 2, Mar/Apr 71,
pp 192-203

indifferent gas in the extracellular and intracellular compartments as a
function of time and diffusion characteristics was proposed.

2/2

"A Method of Measuring the Permittivity of Thin Dielectric Sheet Materials"

Translation: Experimentally substantiated recommendations are given on use of the resonator method for measuring the permittivity of specimens in the shape of a disc with less than half-wave thickness. In order to eliminate errors due to residual gap, it is recommended that the permittivity of such specimens be measured under no-load or peak conditions. Methods of realizing these conditions are indicated. Formulas are given for calculating loss tangents measured by the method of transmission under no-load and peak conditions. Three illustrations, bibliography of four titles. Resumé.

1/1

USSR   UDC: 621.317.335.3

POYARKOVA, V. Ye., ZAL'TSMAN, Ye. B.

"On the Effect Which Deformation of Dielectric Specimens has on the Accuracy
of Measuring Permittivity on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Re-
ports of the All-Union Scientific and Technical Conference on Radio Engineer-
ing Measurements. Vol. 1), Novosibirsk, 1970, pp 105-107 (from RZh-Radiotekh-
nika, No 1, Jan 71, Abstract No 1A361)

Translation: The additional error caused by deformation of dielectric
specimens is estimated for the simplest forms of deformation of disc speci-
mens when they take the form of a lens: concavo-convex, plano-convex, etc.
It was found from these investigations that no-load or antinode conditions
should be used for measuring permittivity. The condition under which de-
formation does not yet noticeably reduce the Q of a resonator is found and
evaluated. In order to minimize error, formulas are found which should be
used in calculating the effective thickness of deformed specimens. Bibliog-
raphy of one title. E. L.

1/1

1/2   009   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--SYNTHESIS OF SOME 2,ARYL AND 2,ARYLMETHYLENE,1,3,INDANDIONES -U-

AUTHOR-(02)-SOLOVYEV, A.S., ZALUKAYEV, L.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(3),
   369-72
DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC SYNTHESIS, METHYLENE, AROMATIC KETONE, AROMATIC
   ALDEHYDE, ORGANOSODIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1115   STEP NO--UR/0153/70/013/003/0369/0372

CIRC ACCESSION NO--AT0134801
                       UNCLASSIFIED

CIRC ACCESSION NO--AT0134801
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 2,ARYL,1,3,INDANDIONES ARE
  SYNTHESIZED IN 60-90PERCENT YIELD BY CONDENSING THE APPROPRIATE AROMATIC
  ALDEHYDE WITH PHTHALIDE IN THE PRESENCE OF NAOME IN ETOAC 2 HR AT
  65DEGREES. 2,ARYLMETHYLENE,1,3,INDANDIONES ARE SYNTHESIZED IN
  50-74PERCENT YIELD FROM THE AROMATIC ALDEHYDE BY CONDESNSING WITH THE NA
  SALT OF ET 1,3,INDANDIONE,2,CARBOXYLATE.   FACILITY: VORONEZH.
  GOS. UNIV. VORONEZH, USSR.

UNCLASSIFIED

USSR   UDC 546.56;611.621;620.187+539.26

ZALUTSKIY, V. P., NESTERENKO, Ye. G., and OSIPENKO, I. A., Institute of Metal Physics, Academy of Sciences UkrSSR

"Structural Changes Upon Decomposition of Cu-Mn-Al Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 3, Sep 70, pp 627-633

Abstract: X-ray and electron-microscope studies were made of the structural changes in the process of decomposition of Cu-Mn-Al alloys. It is demonstrated that after annealing at 200-250° C, the x-ray diffraction pictures show satelites. An increase in the annealing temperature causes a change in the distribution of intensities in the diffusion maxima and leads to the appearance of reflections from the separated phase (Cu_9Al_4). The orientation of the separation phase relative to the crystals of the initial alloy is determined. The results of the x-ray diffraction studies are compared with the electron-microscope studies, and the nature of the structural changes occurring upon decomposition of the Cu-Mn-Al alloy is discussed. It is determined that when the alloy Cu_2AlMn ages Ginier complexes occur in the early stages, while in the later stages the excess phase Cu_9Al_4 is separated.

1/1

USSR

UDC:621.039.548.343

SKOROV, D. M., DASHKOVSKIY, A. I., ZALUZHNYY, A. G. and STOROZHUK, O. M,

"Installation for Study of the Kinetics of Separation of Gaseous Radio-
active Fission Products from Irradiated Materials"

Abstract: Recently, the study of the diffusion mobility of inert gases
in reactor materials has been intensified, since neutron bombardment
causes gaseous fission products to be formed in materials, causing such
undesirable phenomena as radiation swelling and embrittlement. The
authors suggest an installation for determination of the kinetics of
liberation of radioactive gaseous fission products, eliminating the
shortcomings of earlier installations (content of other volatile radio-
active fission products in addition to inert gases in fuel specimens and
the requirement for extremely high purity of helium to prevent oxidation
of specimens, altering the kinetics of gas liberation from the specimen)
by heating the specimen in a high vacuum with continuous oil-free evacua-
tion of the working volume by high-vacuum pumps and prevention of entry
of nongaseous fission products into the trap for inert gas collection,

1/1

USSR

UDC 536.242:021.939.577

YEDISKOV, V. S., ZALETNYY, G. I., and YEDINOVICH, A. A., Minsk Branch, Power Institute imeni G. M. Krzhizhanovskiy

"Conjugate Problem of Heat Transfer and Optimum Control of the Unsteady-State Thermal Process of a Nuclear Reactor"

Abstract: A determination is made of the optimal control conditions of the thermal unsteady-state processes of a water-cooled water-moderated power reactor by means of a non-classical variational problem whose analysis is carried out with the use of the Pontryagin maximum principle. The considered system of conjugate equations incorporates the parabolic equation of heat conductivity and the hyperbolic equation of convective heat transfer. The system of input equations is complemented by two criterial functionals J_1 and J_2, which describe the maximum heat removal and minimum temperature deviation of the coolant at the channel outlet in which a heterogeneous fuel element is placed axisymmetrically. The reactivity and coolant velocity are utilized as the control parameters. A computing algorithm is constructed and fuel element data of the VVER-1 water-cooled water-moderated reactor are assumed for the numerical estimation.
1/1

USSR

ZALYAPIN, V. I., LYUSTERNIK, L. A.

"One Class of Problems from Queueing Theory with Linear Couplings"

Mat. vopr. upr. proiz-vom [Mathematical Problems of Production Control
-- Collection of Works], No 5, Moscow, 1973, pp 13-17 (Translated from
Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V56 by the
authors)

Translation: The works of L. A. Lyusternik (RZHMat, 1969, 3V39; 1971,
2V48) have studied one queueing problem in which the input flows are
coupled by a certain linear relationship. This report discusses certain
generalizations of the plan of linear couplings between input flows which
are possible from the standpoint of problems in queueing theory.

1/1

- 11 -

USSR

ZALYAPIN, V. I.

"Some Properties of Generalized Cylindrical Functions"

Mat. Vopr. Upr. Proiz-vom. [Mathematical Problems of Production Control -- Collection of Works], No 4, 1972, Moscow, pp 36-42 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V87 by I. Kovalenko).

Translation: Earlier, L. A. Lyusternik (RZhMat, 1971, 2V48) introduced generalized cylindrical functions. This article presents a new probabilistic plan, leading to generalized cylindrical functions and consisting of the following. Suppose in n, a one-dimensional space, we fix the vectors $e_1, \ldots, e_n$, each n - 1 of which are linearly independent, where $e_1 + \ldots + e_n = 0$. Suppose at moments forming a simple flow of homogeneous events a particle undergoes independent jumps, each of which can take on the value e_i with probability p_i, $1 \le i \le n$. We represent by p(t, k) the probability that at moment t the position of the particle is $\sum_{i=1}^{n} k_i e_i$, where k = $(k_1, \ldots, k_n)$ on the condition that where t = 0, the particle is located at the coordinate origin. The functions p(t, k) degenerate through generalized cylindrical functions of L. A. Lyusternik. Certain properties of the latter are studied.
1/1

11

USSR

UDC 621.355.2.035.2(088.8)

ZALYATDINOV, Sh. S.

"Method of Manufacture of Lead-Acid Battery Electrodes"

USSR Author's Certificate No 301768, Filed 16/03/70, Published 2/06/71, (Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No 3 L232 P by V. S. Levinson).

Translation: In the method suggested for manufacture of Pb battery electrodes, the electrodes are separated following drying as they are put on the assembly conveyer, at the same time that both separated electrodes are placed on it. This increases the productivity of the process and simplifies the equipment required.

1/1

USSR

UDC   615.371:576.851.42/.012:542.9

TARAN, I. F., and ZAMAKHAYEVA, Ye. I., Scientific Research Anti-plague Institute of the Caucasus and Transcaucasia

"Assessment of Prospects for the Development of Vaccines From Nonagglutinating Strains of Brucellae"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 48, No 2, Feb 71, pp 53-58

Abstract: Data on nonagglutinating brucellosis vaccines given in the literature and an experimental study of a vaccine strain of this type, Br. abortus No 3143-P, indicate that these vaccines are of no advantage with respect to the level of immunity produced by them as compared with conventional live vaccines, specifically those derived from the strain Br. abortus No 19. Strain No 3143-P, administered to guinea pigs, produced severe local lesions of the liver and spleen 6 mo after administration. An effect of this type may be produced by other nonagglutinating Brucella strains as well. The allergenic properties of non-agglutinating Brucella strains create difficulties as far as
1/2

USSR

differentiation between postvaccinal and postinfectious allergic reactions is concerned. Lack of formation of agglutinins after administration of these strains does not solve the problem of distinguishing between postvaccinal and postinfectious immunolog- ical reactions in laboratory tests such as those given to sheep, in which disappearance of infection is established on the basis of negative results in the complement fixation reaction and an allergy test. Preparation and dosage of nonagglutinating vaccines are difficult. Introduction of these vaccines is not justified from the theoretical or practical standpoint.
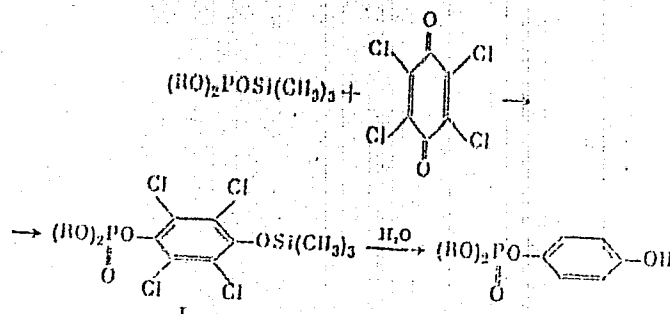
2/2

USSR

PUDOVIK, A. N., BATYYEVA, E. S., and ZAMALETDINOVA, G. U.

"The reaction of Trimethylsilyl Diethyl Phosphite with Chloranil"

Abstract: The title reaction was carried out with heating in anhydrous ether under an atmosphere or argon with the formation of crystalline diethyl p-trimethylsilyloxytetrachlorophenyl phosphate as follows:

$$(\text{RO})_2\text{POSi}(\text{CH}_3)_3 + \quad \text{[chloranil ring]} \rightarrow$$

$$\rightarrow (\text{RO})_2\text{PO}-\text{[tetrachlorophenyl]}-\text{OSi}(\text{CH}_3)_3 \xrightarrow{\text{H}_2\text{O}} (\text{RO})_2\text{PO}-\text{[phenyl]}-\text{OH}$$

I

1/2

- 11 -

USSR

PUDOVIK, A. N., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, p 2577

The structure was confirmed by NMR of P^{31} and the hydrolysis reaction. The chemical shift from NMR was characteristic of the phosphate structure. Paramagnetic resonance spectra also indicated a signal from the protons of the Me_3.

2/2

USSR   UDC 547.241 + 547.391

PUDOVIK, A. N., BATYYEVA, E. S., and ZAMALETDINOVA, G. U., Institute of
Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Academy of Sciences,
USSR

"Reaction of Trimethylsilylphosphite With O,O-Diethylacetylphosphonate"

Abstract: Reaction of trimethylsilylphosphite with O,O-diethylacetyl-
phosphonate in ether and argon atmosphere occurs with an exothermic effect
yielding bis(diethylphosphone)methyltrimethylsilyloxymethane, b.p. 100°/0.003
mm, n_D^{20} 1.4430, d_4^{20} 1.1023. The structure was confirmed by NMR^{31}P and PMR
spectroscopy.

1/1

USSR   UDC 547.241 + 547.391

PUDOVIK, A. N., BATYYEVA, E. S., and ZAMALETDINOVA, G. U.

"Reaction of Trimethylsilylphosphite With 5-Benzalbarbituric Acid"

Abstract: Reacting trimethylsilyldiethylphosphite with 5-benzalbarbituric
acid and 1,3-diphenyl-5-benzalbarbituric acid in ether and under argon
atmosphere yields 0.0-diethylbarbiturylbenzylphosphonate, m.p. 159-160°
and 0,0-diethyl-1,3-diphenyl-barbituryl-5-benzylphosphonate, m.p. 133-
134° respectively.

1/1

USSR

ZAMALIN, S. M.

"Calculation of Certain Geometric Parameters of Complex Surfaces on the Ural 4 Digital Computer"

Translation: Algorithms and programs are studied for engineering and geometric problems most frequently encountered in the practice of calculation of surfaces. They include: the problem of calculation of the geometric parameters of a second order curve, the problem of determining the ordinate of a discrete curve by interpolation methods, as well as problems related to determination of coordinates of points in solids as they rotate about their axes with simultaneous conversion to 3-dimensional coordinate systems. 5 figs; 3 biblio refs.

1/1

3 Ⅱ

USSR

AVILOVA, I. V., BIBERMAN, L. M., VOROB'YEV, V. S., ZAMALIN, V. M., KOBZEV,
G. A., MNATSAKANYAN, A. KH., and NORMAN, G. E., Institute of High Temperatures
of the Academy of Sciences USSR

"Optical Properties of Hot Gases. CO_2 + N_2 Mixture"

Abstract: Elementary radiation processes associated with the presence of car-
bon atoms, either free or in molecules, in planetary atmospheres are studied.
Certain spectral and integral characteristics of CO_2 and N_2 mixtures are calcu-
lated and compared. Particular attention is given to the composition 90% CO_2+
+ 10% N_2, which approximately corresponds to the atmosphere of Venus according
to data from "Venera-4" and "Mariner-5". Computer programs and a computational
technique developed earlier by the authors were used to obtain absorption cross
sections for processes associated with atomic hydrogen in CO_2 + N_2 mixtures. The
absorption cross sections of CN, CO, CO_2, and C_2 are given for the temperatures
4000, 8000, and 12,000°K. The degree of blackness ε, the Rosseland average A,
and the Planck average B were calculated for $T = (6-10) \cdot 10^3$°K and P = 0.1-10 at.

1/2

USSR

A comparison with experimental data showed that the authors' method of tabu-
lating optical properties of hot gases is applicable to $CO_2 + N_2$ mixtures and
produces satisfactory accuracy. From the gas dynamics aspect, the calculations
show that radiation transfer plays a considerable role in entry into planetary
atmospheres. It is pointed out that the degree of blackness of the mixture
studied here is considerably greater than that of air and that the difference
is especially great in relatively low temperatures.

2/2

UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--OPTICAL PROPERTIES OF HOT GASES. CARBON DIOXIDE NITROGEN MIXTURES
-U-

AUTHOR-(04)-AVILOVA, I.V., BIBERMAN, L.M., ZAMALIN, V.M., KOBZEV, G.A.

COUNTRY OF INFO--USSR

SOURCE--TEPLOVIZ. VYS. TEMP. 1970, 8(1), 1-11

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CARBON DIOXIDE, NITROGEN, ABSORPTION COEFFICIENT, ABSORPITON
  SPECTRUM, LIGHT ABSORPTION, TEMPERATURE DEPENDENCE, PRESSURE EFFECT,
  VENUS PLANET, ATMOSPHERIC OPTIC PHENOMENON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0139   STEP NO--UR/0294/70/008/001/0001/0011

CIRC ACCESSION NO--AP0103818
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0103818 UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PREVIOUSLY DESCRIBED CALCG. AND
COMPUTER PROGRAMMING PROCEDURE (B., ET AL., 1964; A., ET AL., 1969) WAS
APPLIED TO THE DETN. OF THE ABSORPTION CROSS SECTIONS RELATED TO C ATOMS
IN CO SUB2 PLUS N MIXTS. AND OF THE SPECTRAL AND INTEGRAL
CHARACTERISTICS OF THE CO SUB2 90 PLUS N SUB2 10PERCENT MIXT.
(CORRESPONDING TO THE VENUS ATM.). THE RESULTS ARE PRESENTED OF THE
CALCN. OF SOME PARAMETERS, FOR A TEMP. OF (6-10) TIMES 10 PRIME3
DEGREESK AND A PRESSURE OF 0.1-10 ATM. THE DATA AGREE SATISFACTORILY
WITH MEASUREMENTS.   FACILITY: INST. VYS. TEMP., MOSCOW, USSR.

UNCLASSIFIED

USSR
UDC 615.616.24-003.656.6

BEZRODNYKH, A. A., KASPAROV, A. A., MAZUROV, V. I., KOCHETKOVA, T. A., RAZDVADOVSKIY, YE. F., SIDOROVA, N. V., KULIKOVA, T. P., GALITSINA, I. Z., ZAMARAYEVA, T. V.

"Antifibrosis Effect of Polyvinylpyridine-N-Oxide as a Compound to Prevent the Development of Silicosis"

Translation: The polymers polyvinyl-pyridine-2- and 4-N-oxides had an effect on the degree of expression of histologic alterations in the early stages of the development of experimental silicosis (10 days) when administered intratracheally and, especially, hypoderm-ically. These polymers normalized the indexes of the oxidation processes in the lung tissue and the myrocardium. After one, three and six months of the experiment, the polymers with a molec-ular weight of 40,000 to 80,000 retarded the development of fibro-sis, reduced the amount of neutrally soluble collagen and

1/2

USSR

BEZRODNYKH, A. A., et al., Nauch. tr. Irkutsk. med. in-t, 1972, vyp 110, pp 52-53

normalized the amino acid composition of the lung tissue, the indexes of the oxidation phosphorylation and the activity of the intracellular enzymes. On intratracheal administration of polymers with a molecular weight of 50,000 to 1,500,000, the development of catarrhal bronchitis and bronchiolitis was noted.

2/2

USSR

ZAMBITSKIY, D. K.

"Some Extremal Problems in a Graph"

Translation: An ordinary graph $L = (X,F)$ with n points is fixed, point
$x \in X$ is assigned weight $p(x) > 0$, line f is assigned line length $c(f) > 0$.
The distance between $x \in X$ and $y \in X$ is called $d(x,y) = \min \sum_{f \in F} c(f)$, where min

is calculated with respect to all simple chains $c(x,y)$ connecting x and
y. Peak x_* of the graph minimizing functional $F(x) = \sum_{y \in X} p(y) d(x,y)$, is

called a weighted mean d-peak of graph L. Let us represent by $Q = \sum_{x \in X} p(x)$

and by $D(x) = \sum_{y \in X} d(x,y)$. The following statements are proven:

  1. If $p(x_*) > \frac{Q}{2}$, then x_* is a unique weighted mean point of L.

  2. $D(x_*) < \frac{1}{n-1} \sum_{x \in X} D(x) < 2D(x_*)$.

1/2

USSR

ZAMBITSKIY, D. K., Prikl. Mat. i Programmir., No 9, Kishinev, Stiintsa
Press, 1973, pp 78-82

3. $D(x_*) \min\limits_{x \in X} p(x) < \frac{1}{n-1} \sum\limits_{x \in X} F(x) < 2D'(x_*) \max\limits_{x \in X} p(x).$

Further, distance $\mu(x,f)$ from point x to line $f = (y,z)$, $\mu(x,f) = \frac{1}{2}[d(x,y) + d(x,z)]$ is defined, line f is assigned weight $p(f) > 0$ and the function $\Phi(x) = \sum\limits_{f \in F} p(f)\mu(x,f)$. It is shown that the set of points minimizing $\Phi(x)$ coincides with the set of weighted centers of mass. Other problems are also studied, the solution of which is reduced to minimization of functionals of this type. There are a number of misprints in the work.
                                                                I. Sigal

2/2

UNCLASSIFIED   PROCESSING DATE--11SEP70

1/2   010

TITLE--EVALUATION OF AN AUTOMATIC PLATE AND FRAME FILTER PRESS WITH MECHANIZED PLATE CLAMPING -U-

AUTHOR--ZAMBROVSKIY, V.A.; ANIKEYEV, YU.V., TSYS, V.A., MUKHIN, I.L.

COUNTRY OF INFO--USSR

SOURCE--SAKH. PROM. 1970, 44(2), 22-7

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, CHEMISTRY

TOPIC TAGS--FILTRATION, PRESS, CHEMICAL AGENT FILTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0155   STEP NO--UR/0339/70/044/002/0022/0027

CIRC ACCESSION NO--AP0103834
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0103834

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN AUTOMATIC PLATE AND FRAME
FILTER PRESS WITH A FILTERING AREA OF 2.5 M PRIME2 IS DESCRIBED AND ITS
PERFORMANCE IN A SUGAR FACTORY UNDER VARIED OPERATING CONDITIONS IS
DETAILED. A TYPICAL CYCLE OF 28 MIN CONSISTED OF LIQUOR FLOW 17.2,
WATER WASH AND COMPRESSION 8.2, AND NONPRODUCTIVE (CLEANING) OPERATIONS
2.6 MIN. SUGAR LOSSES WERE REDUCED TO 0.7PERCENT; CAKES CONTG.
30PERCENT H SUB2 O WERE PRODUCED; BY THE USE OF A PERLITE FILTER AID,
65-8PERCENT DENSE SIRUPS WERE FILTERED AT 8.9 1.-M PRIME2-MIN.

UNCLASSIFIED

USSR   UDC 611.813.1+612.825

ZAMBRZHITSKIY, I. A.

"Function of the Limbic Region from the Comparative Anatomical and
Neurocybernetic Standpoints"

Excerpt from the book Limbicheskaya Oblast' Bol'shogo Mozga (The Limbic
Region), Moscow, 1972, pp 191-195

Translation: From the cybernetic standpoint, the system of cortical terminal
neurons for the afferent association fibers of the limbic region functions as
the input stage of the mechanism of emotional reactions. It is at this stage
that the screening and preliminary integration of specific "emotional" informa-
tion takes place so that this information enters the limbic region in the form
of models coded with a more complex code. This ensures the essential speed of
comparison of current "emotional" information with past experience, which
takes place in advance of the peripheral emotional reaction. Compared with
sensation, representation, and other forms of perception of the outside world,
the emotions stirred by external stimuli more swiftly mobilize various func-
tions of the body (P. K. Anokhin, 1964) and adjust them to make an adequate
response. This requires the cortical mechanism controlling emotions to work
more quickly than the subcortical system subordinated to it. It is paralleled

1/7

USSR

ZAMBRZHITSKIY, I. A., Limbicheskaya Oblast' Bol'shogo Mozga, 1972, pp 191-195

morphologically by the greater complexity and caliber of the branches serving
the preliminary stage of integration of the cortical neurons (terminal
neurons for the afferent association fibers of the limbic region) compared
with the limbic region neurons proper in which their axons end.

The importance of the input stage of integration in the mechanism of
emotions is also indicated by the fact that there is a positive feedback
between it and the limbic region that maintains the functioning of this stage.
The positive feedback enables the limbic region to control the functioning of
the input stage by adapting it to the nature of the emotional stimulus. T.
Kh. Shingarov (1966) showed that the lability of the nervous processes in the
cortical zones of the distant analysors increases at the time a positive
emotion is felt but decreases when the emotion is a negative one. This influ-
ence of the limbic region is exerted through the afferent association connec-
tions to the cortex of the frontal, temporal, and occipital regions of the
brain.

The result of the processing of external information in the limbic
region is the "reaching of a decision", which is perceived by the effector of
emotions. Any emotion can be regarded as a complex of central and peripheral
emotional components that determine its character. The external peripheral
components of emotions consist of gestures, facial expressions, general
2/7

USSR

ZAMBRZHITSKIY, I. A., Limbicheskaya Oblast' Bol'shogo Mozga, 1972, pp 191-195

expressive movements, free play of the vasomotors, etc. The central mechanisms
of emotions include the accompanying reactions in the sphere of sensations and
moods. The effector of emotions integrates the components of emotions into
a single emotional process and controls its external manifestation. The con-
figuration of the effector must therefore match the physiological structure
of the emotions. This configuration must ensure the possibility of rapid
reconstruction of all the bodily functions in order to subordinate them to
emotional reactions. This can be achieved by a complex system of efferent
longitudinal (through the cingulum) and transverse (through the fasciculus sub-
callosus) association fibers which connect the limbic region to the cortical
ends of all the analysors.

    The effector also integrates the operating subcortical mechanisms of the
peripheral components of emotions. A general emotional reaction is a cen-
trally integrated complex of numerous physiological components each of which
irradiates to the periphery independently of one another, i.e., via a special
nerve pathway. The radial principle (central integration of each peripheral
component regardless of the reaction as a whole) is particularly stressed by
P. K. Anokhin (1964) in the physiological structure of emotions.

    Thus, the mechanism of the effector embraces the efferent neurons of the
3/7

- 99 -

USSR

ZAMBRZHITSKIY, I. A., Limbicheskaya Oblast' Bol'shogo Mozga, 1972, pp 191-195

limbic cortex and the efferent association and projection connections formed
by their axons which, in the cybernetic view, comprise the output stage
(efferent integral) of the emotional effector. The structural expression of
the radial principle in the innervation of the peripheral functional com-
ponents that constitute the external manifestation of emotions is 3 separate
projection systems connecting the limbic region to the subcortical formations
through the septum pellucidum, capsula interna, and hippocampus, which control
the subcortical and brainstem structures involved in regulating emotional
behavior (hypothalamus, anterior and posterior nuclei of the thalamus,
striatum, paramedian portion of the brainstem reticular formation, vagal nuclei,
and corticospinal motor system).

    The mechanisms of external expression of emotions changed in ontogeny and
phylogeny showing that emotions play a role in adapting organisms to their
habitat. They are highly developed in primates through movements of the
facial muscles and upper extremities (V. M. Bekhterev's expressive-somatic
reflex). In man, the mechanisms are especially refined. It is hard to believe
that the facial movements which enable man to reflect the subtlest of emotional
sensations are controlled solely by the innate connections between the primary
cell assemblies in the nucleus of the facial nerve that innervate the facial

4/7

USSR

ZAMBRZHITSKIY, I. A., Limbicheskaya Oblast' Bol'shogo Mozga, 1972, pp 191-195

muscles. The subcortical apparatus of the telencephalon where the strictly motor impulses interact with the extrapyramidal cortical impulses undoubtedly also play a part (I. N. Filimonov, 1964). The caudate nucleus, which is connected to the limbic region, is worth special attention here. The role of this nucleus in the realization of expressive movements became quite obvious after Olds (1962) and Brady (1962) showed it to be a significant factor in the mechanisms of emotions after they succeeded in inducing the self-stimulation of this nucleus in rats and cats through implanted electrodes.

The peripheral components of emotional reactions are subdivided clinically and physiologically into external and internal according to the extent to which they are subjected to cortical control. External manifestations of emotions include gestures, facial expressions and corresponding remarks. They differ from the internal in that they can be voluntarily suppressed. In such cases the structures and conductors of effector impulses to the skeletal muscles involved in expressing emotional states are inhibited, whereas the autonomic manifestations of emotions (changes in the cardiovascular and respiratory functions, contractions of gastric and intestinal smooth muscle) are excited rather than inhibited. They constitute the neuroregulatory basis of neuroses. This is consistent with the views of some physiologists

5/7

USSR

ZAMBRZHITSKIY, I. A., Limbicheskaya Oblast' Bol'shogo Mozga, 1972, pp 191-195

(McCulloch, 1944; Smith, 1945; Ward, 1948) who regard limbic field 24 as a powerful effector of autonomic nervous innervation.

Even in this case of physiological division into streams of impulses of the efferent integral, there is some correspondence with the development in the structure of limbic region connections of independent systems of communications with the formations that innervate the external and internal peripheral components of emotions. They are, first, the projection fibers of the limbic region which proceed from the fasciculus subcallosus to the mechanism of subcortical integration of movements of the skeletal musculature in the caudate nucleus and, second, isolated bundles of fibers traveling to the subcortical and brainstem visceral centers: with the fornical bundle to the hypothalamus and with the capsular bundle to the reticular formation and vagal nuclei.

Thus, the system of limbic region connections largely corresponds to the morphological and physiological structure of emotions. The neurocybernetic hypothesis of this correspondence, as described above, assumes that the limbic region contains an afferent integral, functional engram, and effector, i.e., the most critical elements of the mechanism of integration of emotions. This hypothesis rests in general on a highly complex and massive system of association connections with other cortical regions, indicating that this region

6/7

USSR

ZAMBRZHITSKIY, I. A. Limbicheskaya Oblast' Bol'shogo Mozga, 1972, pp 191-195

is particularly important in the development of the intercentral processes,
which also play a major role in the integration of emotional reactions.
V. M. Kas'yanov (1947, 1960) confirmed by physiological experiments that the
limbic region shares in the intercentral relations. He focused on its role
as a relay in the brain.

All this shows that the mechanism of emotions is, on the whole, very com-
plex. I. S. Beritov (1969) believes that emotional behavior depends on the
functioning of many brain structures. The experiments performed in his labor-
atory on animals with the entire neocortex ablated show that such animals are
capable of emotional reactions (I. A. Ordzhonikidze et al., 1959; M. A.
Nutsubidze et al., 1961; M. A. Nutsubidze, 1969), but their nature changes
after the neocortex is removed because the emotional reactions become isolated
from rational behavioral acts. As a result, the reactions begin to occur
independently of an emotional factor. These experiments confirmed that the
neocortex and its specific relation to the second signaling system (language)
play a role in integrating the entire emotional-behavioral reaction.

7/7

- 101 -

Psychology

ZAMBRZHITSKIY, I. A., Laboratory of Neurosurgery, Brain Institute, Academy of
Medical Sciences USSR, Moscow

"Efferent Links in the Limbic Region in Macaca Monkeys in the Light of the
Modern Concept of Emotional Expression"

Abstract: Macaca are precursors of primates and are distinguished by their
great emotional expressiveness. In three animals, portions of the cortex were
removed in the following regions: area 24, close to the genu of the corpus
callosum, area 23 above the splenium of the corpus callosum, and in the pos-
terior retrosplenial part of the posterior limbic subregion corresponding to
area 26. It was found that the limbic region in macacas has a complex system
of associational and projectional relationships with the cortical and sub-
cortical formations, as indicated by the degeneration of axons in the post-
operative period. Associative links were found between the limbic region
and the adjacent precentral, parietal, occipital, and temporal regions in
the medial and superior-lateral parts of the hemispheric surface. Efferent
1/2

USSR

fibre bundles were traced from the limbic region to the anterior and lateral thalamic nuclei and head of the caudate nucleus, to the subthalamic region and the lateral and medial geniculate bodies, as well as from the anterior limbic subregion to the hypothalamus. The data obtained are discussed in connection with a literature review covering the results of similar investigations in the cat. So far, the sensitive role played by the limbic region in the emotional mechanisms has not yet been clearly elucidated. Primates have a strongly developed mechanism for external expression of their emotions through movement of mimic muscles and expressive movements of the upper extremities, as is particularly evident in man. The known physiological premises concerning the significance of the limbic region in the integration of emotional processes in the organism have not lost ground; however, additional studies are required to elucidate this significance.

2/2

ZAMBRZHITSKIY, V.N.

DEVELOPMENT OF MARTENSITIC CONVERSION DURING DEFORMATION AND THE MECHANICAL PROPERTIES OF TRIP STEEL.

[Article by O. P. Maksimova, L. M. Utevskiy, V. N. Zambrzhitskiy, M. A. ......, ...; Moskvichev, Central Scientific Research Institute of ...rrous Me.-...llurgy imeni I. P. Bardin, Moscow, Fiziko-metallov i metallovedeniye, ...
sian, Vol 34, No 5, 1972, submitted 19 October 1971, pp 1075-1087]

A study was made of the interrelation of martensitic con-
version during deformation and the structure and mechanical
properties of trip steel having different inclination
toward the formation of deformation martensite. The effect
of the warm work hardening and the test temperature on the
capacity for conversion, the structure and mechanical char-
acteristics of trip steel were investigated. The character-
istic features of the fine structure of this steel explain-
ing the causes of severe hardening during warm work harden-
ing of austenite and the increase in the strain hardening
coefficient during subsequent tensile testing are described.

A great deal of experimental material accumulated in the Soviet Union and abroad on the laws of martensitic conversions in various alloys and var... various conditions have provided a scientific basis for creating a new class of structural steel. — Metastable austenitic complexly alloyed steel (trip steel in the English terminology) hardened by warm work hardening and have high strength with very high plasticity. The latter is insured by the mar... tensitic conversion during plastic flow (testing): the shear mechanism of the conversion causes relaxation of the peak stresses, and the torsion of the carbide martensite in the work hardened austenite — severe local harde... ing, preventing premature necking and rupture. The extraordinary combination of strength and plasticity which cannot be obtained by other known methods of thermal and thermomechanical treatment has in recent years attracted the attention of many researchers to this new class of steel (1-6).

The most complete and efficient utilization of trip steel as a structural material is possible only under the condition of sufficiently compre-
hensive study of the phase transformations, the structural changes and mecha-
ical behavior of the steel — in connection with the role of such most im-
portant factors as the peculiarities of the composition (the position of the...

- 18 -

M_j point, the inclination toward carbide formation, the capacity for 1^a or γ^-c martensitic conversion, and so on), the conditions of initial hardening, thermomechanical treatment (temperature, degree of work hardening, the defor-mation divisibility, subsequent aging, and so on) and, finally, the mechanical testing conditions (the temperature and rate conditions primarily).

This article contains a discussion of the results of some studies per-formed on trip steel of compositions close to those proposed in [1]. Studies were made of the peculiarities of the structural state of the initial work-hardened austenite, the interrelation between the kinetic picture of the mar-tensite to conversion and the formation of the properties during mechanical testing and the peculiarities of the structure of the final conversion products arising as a result of these tests.

Experimental Procedure and Material

A study was made of two groups of steel -- with 0.3 and 0.5 percent C in which the resistance of the austenite to martensitic conversion varied by variation of the manganese content known for its very sharp effect on the position of the M_s and M_j points. With sufficiently strict retention of the composition with respect to the other alloying elements (Cr, Ni, Mo, Si) the manganese content varied in the steel with 0.3 percent C from 1.4 to 5.4 percent (table 1), and in the steel with 0.5 percent C, from 1.4 to 2.7 percent, and in order to compensate for the effect of the carbon on the position of the M_j point, the nickel content in the group of steels with 0.5 percent C was reduced.

Table 1
Chemical composition of the investigated steel, percent by weight

№	C	Mn	Cr	Ni	Mo	Si
1	0.32	1.40	9.80	7.50	4.0	2.0
2	0.32	1.50	9.10	4.7	1.9	
3	0.30	2.55	9.10	4.7	2.0	
4	0.30	2.70	9.60	4.0	2.0	
5	0.52	1.25	8.60	1.15	1.9	
6	0.55	1.93	9.05	1.85	2.0	
7	0.50	2.52	9.05	4.20	2.0	
8	0.67	2.46	9.05	4.20	2.0	
9	0.56	3.73	9.25	1.25	2.2	
10	0.57	4.24	9.35	4.25	2.0	
11		5.40	9.35	1.24		

The steel was made in a vacuum induction furnace. The ingots (13 kg) were forged into 10 x 10 mm bars -- billets under warm work hardening; the bil-lets were subjected to water quenching from 1,150° C and work hardening by rolling at temperatures of T_ψ from + 20° to 650° with a different degree of reduction for partial reduction of about 10 percent. Samples were cut from

- 19 -

1/2   019
TITLE--EVALUATION OF THE BROMSULFALEIN TEST IN CHRONIC HEPATITIS AND
    CIRRHOSIS OF THE LIVER -U-   UNCLASSIFIED   PROCESSING DATE--13NOV70
AUTHOR-(03)-ZHEREBTSOV, L.A., SHAROVA, YU.A., ZAMCHIY, A.A.

COUNTRY OF INFO--USSR

SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 6, PP 52-58

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TEST, LIVER FUNCTION, HEPATITIS, CIRRHOSIS, BILIRUBIN,
    ERYTHROCYTE, MERCURY COMPOUND, CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0992

CIRC ACCESSION NO--AP0133068

STEP NO--UR/0497/70/048/006/0052/0058

UNCLASSIFIED

CIRC ACCESSION NO--AP0133068   UNCLASSIFIED   PROCESSING DATE--13NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BROMSULFALEIN TEST WAS USED
FOR STUDY OF THE EXCRETORY FUNCTION OF THE LIVER IN 102 PATIENTS
SUFFERING FROM CHRONIC HEPATITIS AND CIRRHOSIS OF THE LIVER. THE TEST
PROVED TO BE POSITIVE IN 92 CASES. THE INDICES OF THE BROMSULFALEIN
TEST FLUCTUATED FROM 6.8 TO 73.5 PERCENT. THE BROMSULFALEIN TEST IS
HIGHLY SENSITIVE AND SPECIFIC; IT REFLECTS THE MARKEDNESS OF AFFECTION
OF THE FUNCTIONAL CAPACITY OF THE LIVER. THERE EXISTS A CLOSE
CORRELATIVE DEPENDENCE BETWEEN INDICES OF THE BROMSULFALEIN TEST, LEVEL
OF PROCONVERTIN AND DEGREE OF DYSPROTEINEMIA IN PATIENTS WITH CIRRHOSIS
OF THE LIVER. THERE IS A CERTAIN PARALLELISM BETWEEN CHANGES OF THE
BROMSULFALEIN TEST, CONTENT OF BILIRUBIN, ERYTHROCYTE MACROCYTOSIS, AND
TO A LESSER DEGREE, OF THE MERCURIC CHLORIDE TEST. A POSITIVE DYNAMICS
OF THE BROMSULFALEIN TEST IN PATIENTS WITH CHRONIC HEPATITIS AND LIVER
CIRRHOSIS WAS OFTEN COMBINED WITH AN IMPROVEMENT OF CLINICAL DATA AND A
NUMBER OF FUNCTIONAL TESTS.   FACILITY: GEMOTERAPEVTICHESKAYA
KLINIKA TSENTRAL'NOGO INSTITUTA GEMATOLOGII I PERELIVANIYA KROVI MZ
SSSR, MOSKVA.

UNCLASSIFIED

THE USE OF ALBUMIN IN CIRRHOSIS OF THE LIVER AND PROTEIN DEFICIENCY CAUSED BY OTHER DISEASES

Al'perin, P. M.; Zherebtsov, L. A.; Zamchiy, A. A.

Summary

In 19 patients with liver cirrhosis and in 11 patients with protein deficiency of diverse origin the authors instituted treatment by means of repeated drip transfusions of a 20 per cent albumin solution. In 22 out of 30 patients the general state improved. In a number of cases there were noted an increase of the body weight and diuresis, disappearance or diminution of ascites and edema. Functional liver tests showed no essential changes. Repeated transfusions of albumin resulted in an increase and sometimes normalization of the total serum protein. According to data of paper electrophoresis this rise occurs at the expense of increase of the albumin fraction. The immunoelectrophoregram shows an intensification of those protein fractions, which in patients in the initial state were poorly marked (albumin, alpha$_1$- and alpha$_2$-globulins).

Albumin therapy is an effective means in treating protein deficiency and cirrhosis of the liver.

REEL/FRAME
19771274

DI 02

USSR   UDC 547.963.3

BRAUDE, N. A., and ZAMCHUK, L. A., Institute of General Genetics, Academy of
Sciences USSR, Moscow

"Immunological Specificity of DNA of the Phage SPO1 of Bac. subtilis"

Abstract: The immunological properties of DNA from the phage SPO1 of Bac.
subtilis were studied in order to evaluate the role of 5-hydroxymethyluracil
as a specific antigenic determinant. Rabbits were immunized with a combination
of denatured DNA from the phage SPO1 plus methylated bovine serum albumin,
and this resulted in the appearance of antibodies capable of reacting with the
DNA of the SPO1 phage, particularly with denatured DNA. The antibody titer,
increased during the course of the immunization cycle and continued to rise even
a ter the completion of immunization, achieving a maximum on the thirteenth day.
The number of antibodies decreased noticeably within 1 to 2 months; within 3
months, no antibodies at all were observed. It was also established experimentally
that the ability of the antibodies to react only with DNA that contains 5-
hydroxymethyluracil does not depend on the presence of glucose in the DNA. Thus,
5-hydroxymethyluracil acts as a specific antigenic determinant in DNA from the
SPO1 phage. The results obtained are compared with results cited in the litera-
ture, and an attempt is made to explain discrepancies.

1/1

UDC 621.383-182.7

USSR

ZAMFIR, G.N., ZOLOTAREV, V.F., RABINOVICH, TS. M.

"Scanistor With Continuous Base"

Uch. zap. Ul'yanovsk. gos. ped. in-t (Scientific Annals Of Ul'yanovskiy State Pedagogical Institute), 1970, 24, Issue 3, Part 1, pp 83-105 (from RZh--Elektronika i yeya primeneniye, No 3, March 1971, Abstract No 3B305)

Translation: An equivalent circuit is considered and a method is proposed for computation of a scanistor with a continuous [nepreryvnyy] base. An experiment-al scanistor is described which possesses a threshold sensitivity $\sim 10^{-13}$ watt. 11 ref. I.B.

1/1

UDC 621.383.82

USSR

ZAMFIR, G.N., ZOLOTAREV, V.F., RABINOVICH, TS.M.

"Scanistor With Discrete Base"

Uch. zap. Ul'yanovsk. gos. ped. in-ta (Scientific Annals Of Ul'yanovskiy State Pedagogical Institute), 1970, 24, Issue 3, Part 1, pp 106-147 (From RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B306)

Translation: The design of a line element of a silicon scanistor with a discrete [diskretnyy] base is described and the special features of its operation are considered. An analysis is conducted of the voltampere and load characteristics of the scanistor. The effect of the time lag of the diode elements on the parameters of the scanistor is considered. The specific resolution of the scanistor equals 44 lines to 1 mm, and the sensitivity threshold is $\sim 1.5 \cdot 10^{-13}$ watt. 14 ref. I.B.

1/1